CODE BASICS

CONSUMER GOODS AD-HOC INSIGHTS

RESUME CHALLENGE 4 - SQL

Presented by Krishna Sameera Kota

INTRODUCTION

Atliq Hardwares is one of the leading computer hardware producers in India and well expanded in other countries too. Founded in 2017, AtliQ emerged as an IT & Business Consulting company dedicated to facilitating the seamless integration of business processes through automated tools.

Their strategic insights and dependable processes have yielded exceptional outcomes across diverse industries, fostering contented clients, fruitful partnerships, and rapid expansion

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OBJECTIVE

The management noticed that they do not get enough insights to make quick and smart data-informed decisions.

They want to expand their data analytics team by adding several junior data analysts.

Tony Sharma, their data analytics director wanted to hire someone who is good at both tech and soft skills.

Hence, he decided to conduct a SQL challenge which will help him understand both the skills.

As part of this challenge, I have solved the 10 AD-Hoc requests and presented my insights.

Let’s go over how I did it.

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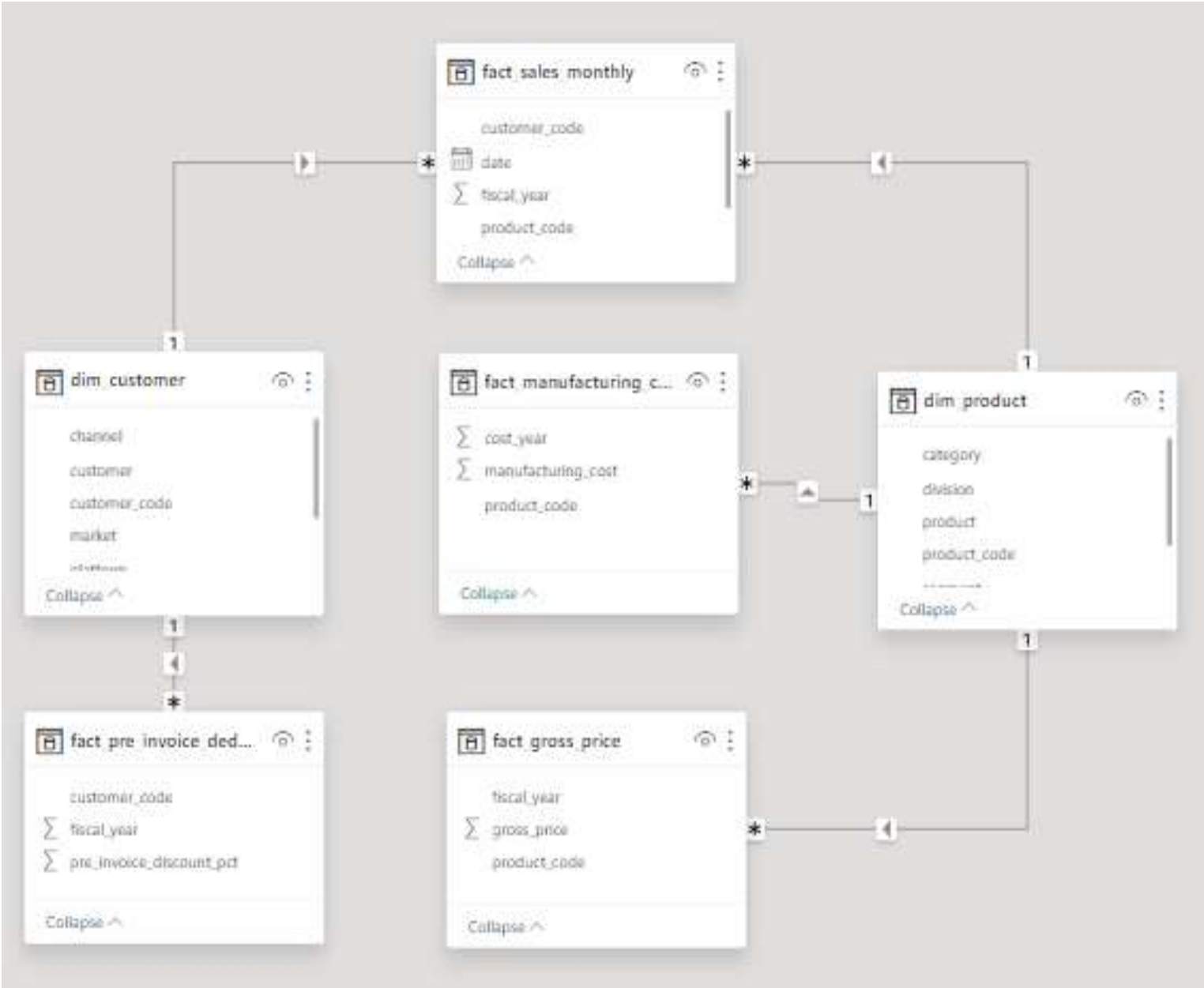
DATA MODEL, TABLES & TOOLS

1. dim_customer: contains customer-related data
2. dim_product: contains product-related data
3. fact_gross_price: contains gross price information for each product
4. fact_manufacturing_cost: contains the cost incurred in the production of each product
5. fact_pre_invoice_deductions: contains pre-invoice deductions information for each product
6. fact_sales_monthly: contains monthly sales data for each product



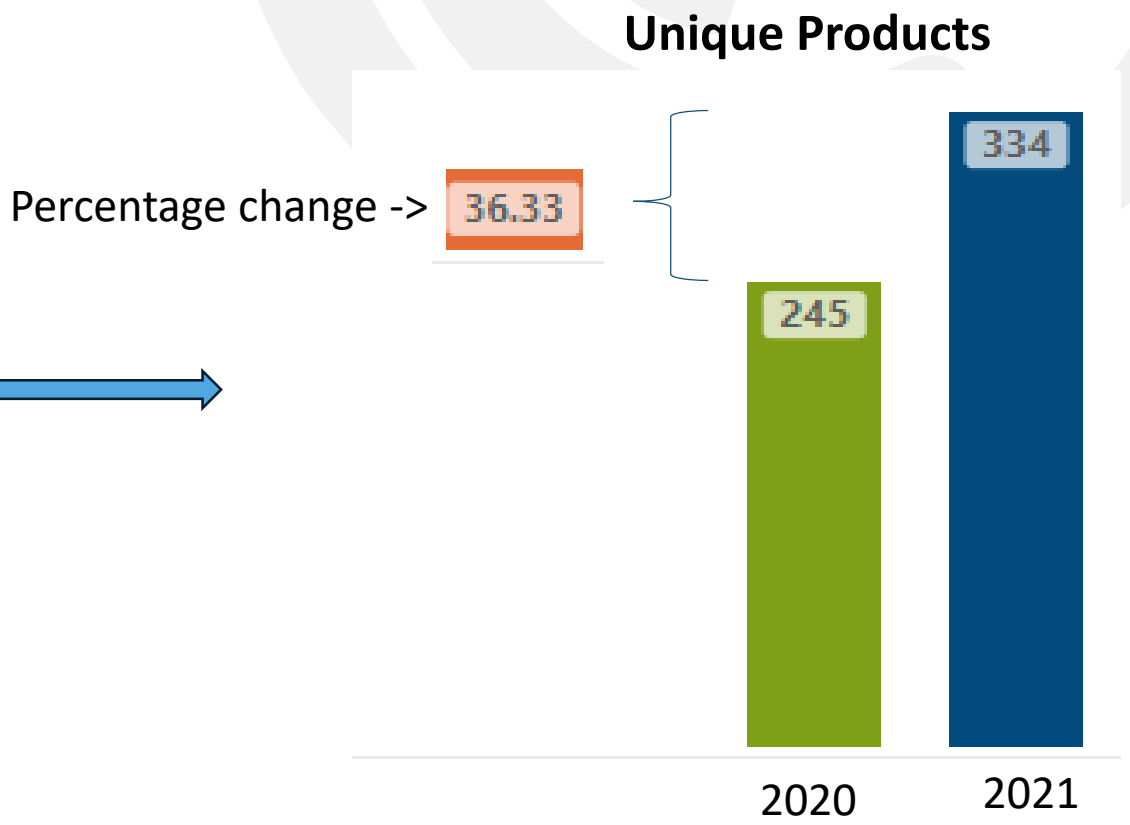
1. Provide the list of markets in which customer "Atliq Exclusive" operates its business in the APAC region.

```
SELECT Market
FROM dim_customer
WHERE customer = 'Atliq Exclusive'
AND region = 'APAC'
GROUP BY market
ORDER BY market;
```

Market
Australia
Bangladesh
India
Indonesia
Japan
Newzealand
Philiphines
South Korea

2. What is the percentage of unique product increase in 2021 vs. 2020? The final output contains these fields - unique_products_2020, unique_products_2021, percentage_chg

```sql
WITH product_counts AS (
SELECT
fiscal_year,
COUNT(DISTINCT Product_code) as unique_products
FROM fact_gross_price
group by fiscal_year
)
SELECT
p1.unique_products as unique_products_2020,
p2.unique_products as unique_products_2021,
Round((p2.unique_products - p1.unique_products) *100 /
      (p1.unique_products),2)  AS percentage_chg
FROM product_counts p1
cross join product_counts p2
WHERE p1.fiscal_year = 2020 AND p2.fiscal_year = 2021;
```

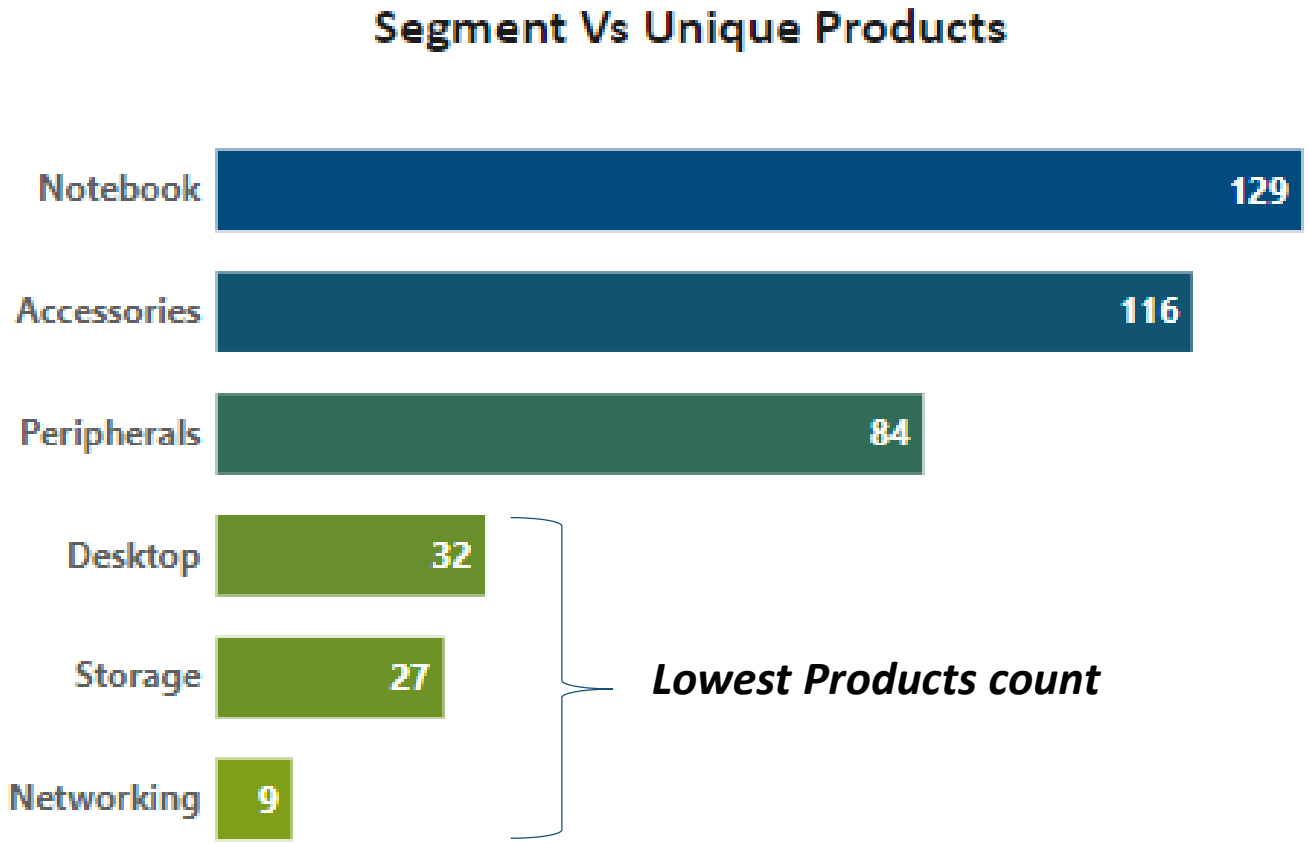


unique_products_2020	unique_products_2021	percentage_chg
245	334	36.33

3. Provide a report with all the unique product counts for each segment and sort them in descending order of product counts. The final output contains 2 fields, segment and product_count

```sql
SELECT
segment,
COUNT(DISTINCT product_code) AS product_count
FROM dim_product
GROUP BY segment
ORDER BY product_count DESC;
```

segment	product_count
Notebook	129
Accessories	116
Peripherals	84
Desktop	32
Storage	27
Networking	9



4. Follow-up: Which segment had the most increase in unique products in 2021 vs 2020? The final output contains these fields - segment, product_count_2020, product_count_2021,difference

```
WITH segment_product_counts AS (
SELECT
dp.segment,
COUNT(DISTINCT CASE WHEN fs.fiscal_year = 2020 THEN fs.product_code END) AS product_count_2020,
COUNT(DISTINCT CASE WHEN fs.fiscal_year = 2021 THEN fs.product_code END) AS product_count_2021
FROM dim_product dp
JOIN fact_sales_monthly fs ON dp.product_code = fs.product_code
GROUP BY dp.segment
)
SELECT
segment,
product_count_2020,
product_count_2021,
product_count_2020 - product_count_2021 AS difference
FROM segment_product_counts;
```

Segment	Unique Products 2020	Unique Products 2021	Difference
Accessories	69	103	34
Notebook	92	108	16
Peripherals	59	75	16
Desktop	7	22	15
Storage	12	17	5
Networking	6	9	3
Total	**245**	**334**	**89**

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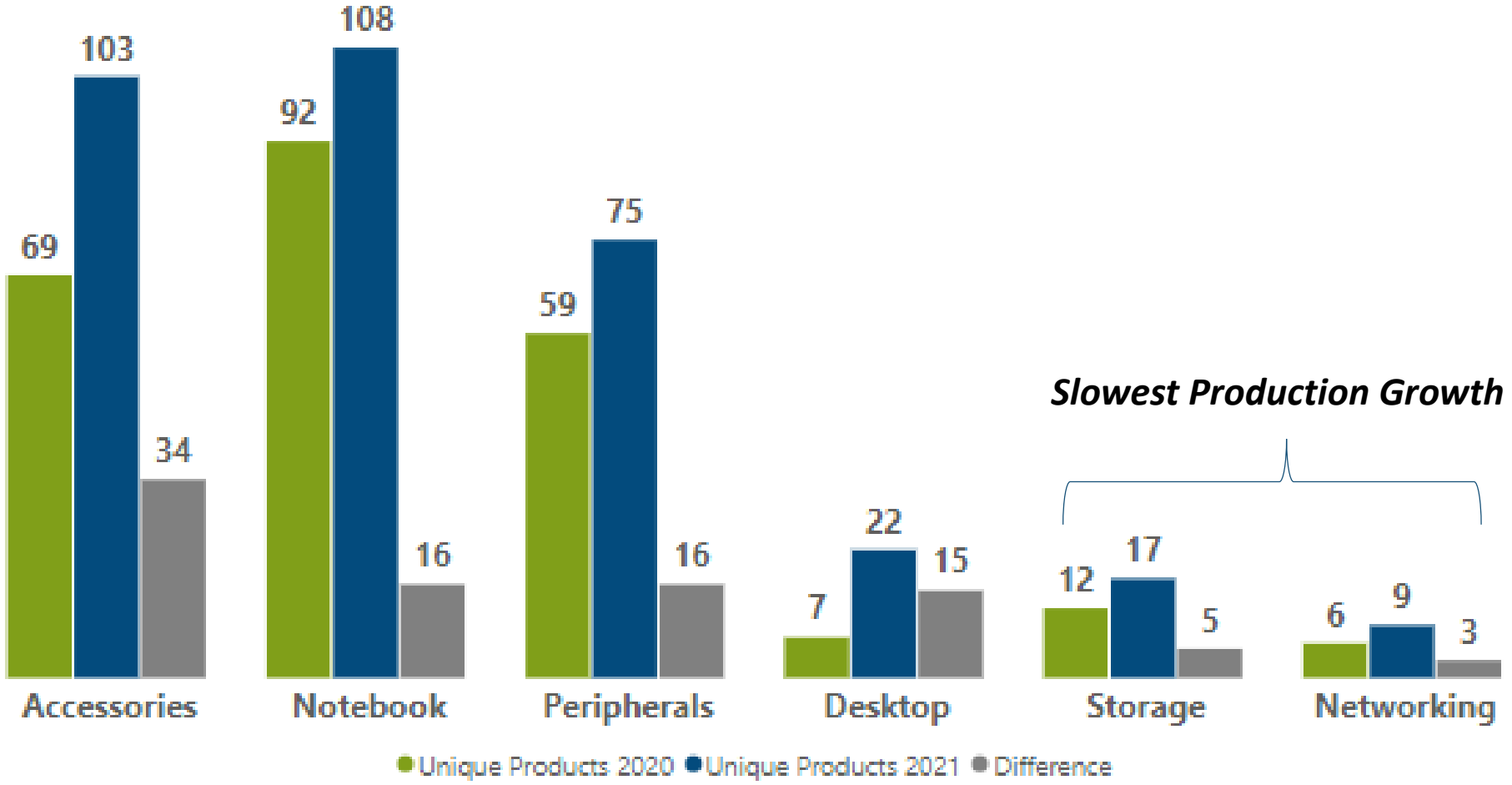
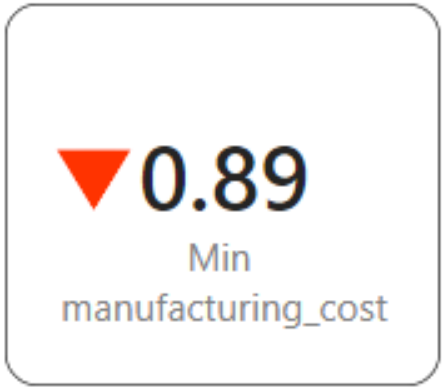
Segment wise - Unique Products Difference - 2020 vs 2021



Slowest Production Growth

5. Get the products that have the highest and lowest manufacturing costs.-- The final output should contain these fields - product_code, product, manufacturing_cost

product_code	product	manufacturing_cost
A6120110206	AQ HOME Allin1 Gen 2	240.5364
A2118150101	AQ Master wired x1 Ms	0.8920



A2118150101
AQ Master wired x1 Ms Mouse

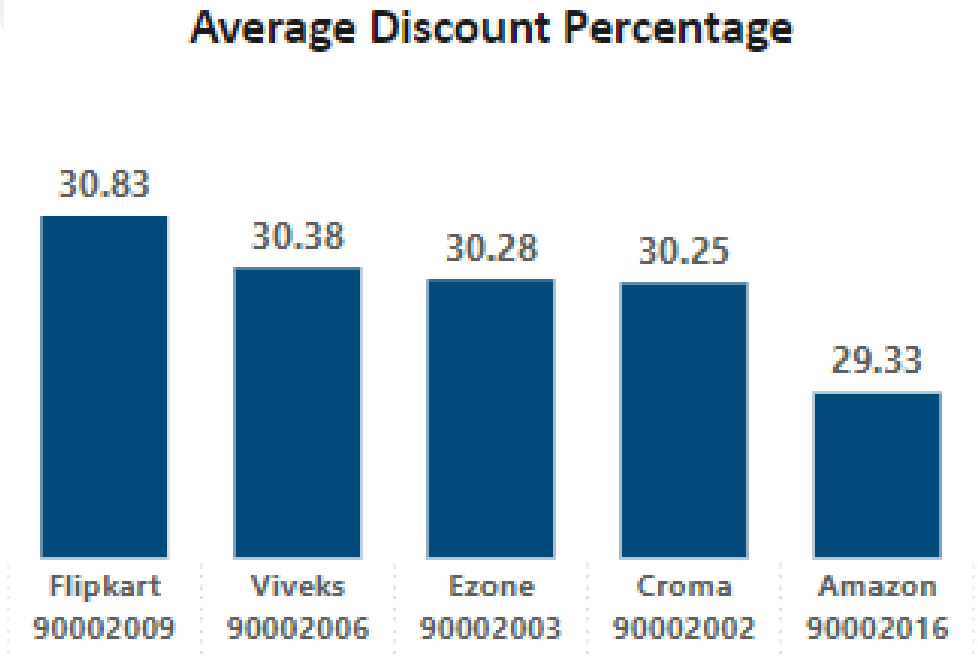
```sql
SELECT
dp.product_code,
dp.product,
fm.manufacturing_cost
FROM dim_product AS dp
JOIN fact_manufacturing_cost fm ON dp.product_code = fm.product_code
WHERE
    fm.manufacturing_cost = (SELECT MAX(manufacturing_cost) FROM fact_manufacturing_cost
    OR
    fm.manufacturing_cost = (SELECT MIN(manufacturing_cost) FROM fact_manufacturing_cost)
ORDER BY fm.manufacturing_cost DESC;
```

A6120110206
AQ HOME Allin1 Gen 2 Personal Desktop

6. Generate a report which contains the top 5 customers who received an average high pre_invoice_discount_pct for the fiscal year 2021 and in the-- Indian market. The final output contains these fields - customer_code, customer, average_discount_percentage

```sql
SELECT
fd.customer_code,
dc.customer,
ROUND(AVG(fd.pre_invoice_discount_pct),4) AS average_discount_percentage
FROM fact_pre_invoice_deductions fd
JOIN dim_customer dc ON fd.customer_code = dc.customer_code
WHERE fd.fiscal_year = 2021 AND dc.market = 'India'
GROUP BY fd.customer_code, dc.customer
ORDER BY average_discount_percentage DESC
LIMIT 5;
```

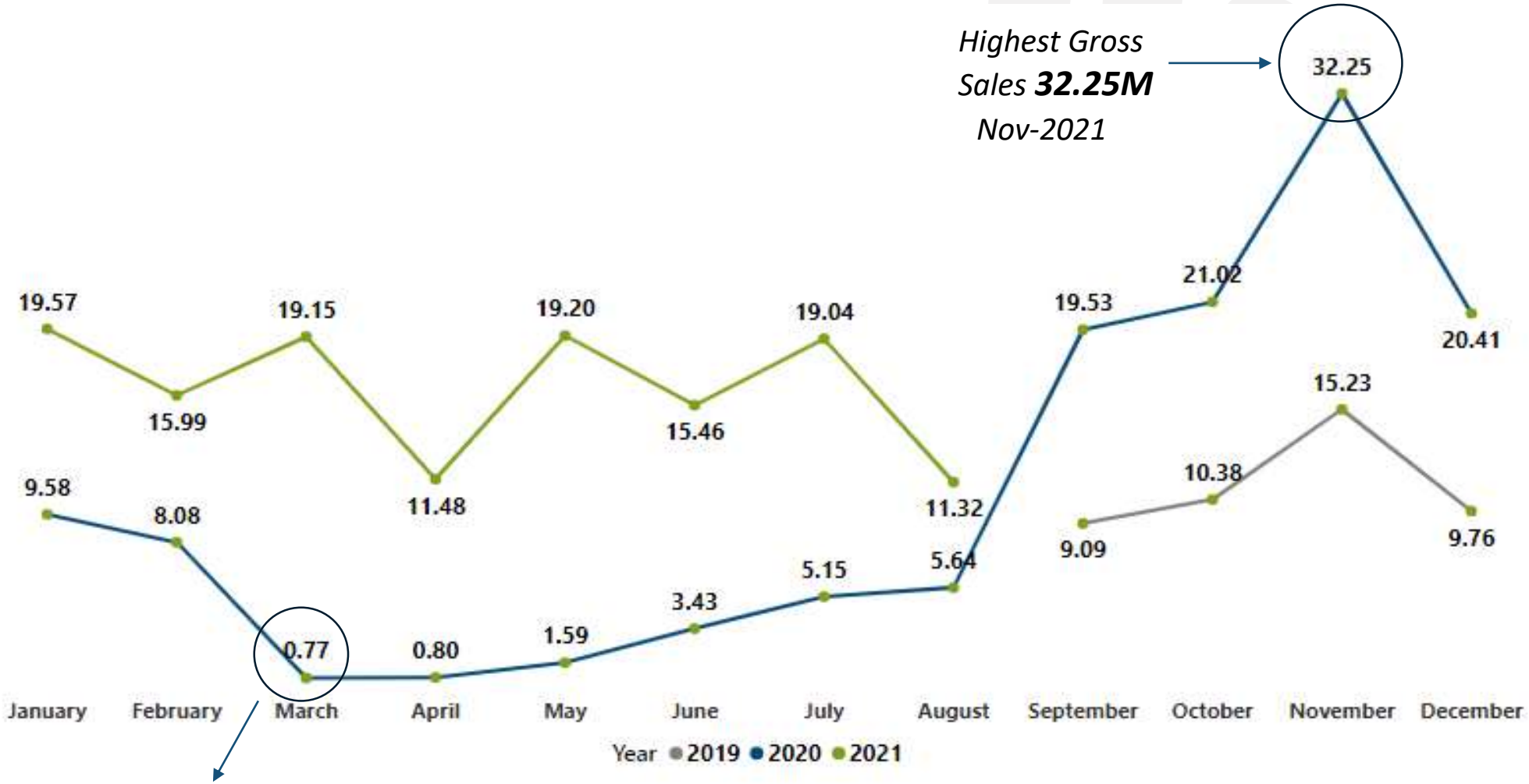
customer_code	customer	average_discount_percentage
90002009	Flipkart	0.3083
90002006	Viveks	0.3038
90002003	Ezone	0.3028
90002002	Croma	0.3025
90002016	Amazon	0.2933



7. Get the complete report of the Gross sales amount for the customer “Atliq Exclusive” for each month. This analysis helps to get an idea of-- low and high-performing months and take strategic decisions. The final report contains these columns: Month,, Year, Gross sales Amount

```sql
SELECT
MONTHNAME(fs.date) AS Month,
YEAR(fs.date) AS Year,
ROUND(SUM(fg.gross_price * fs.sold_quantity), 2) AS Gross_Sales_Amount
FROM fact_sales_monthly fs
JOIN dim_customer dc ON fs.customer_code = dc.customer_code
JOIN fact_gross_price fg ON fs.product_code = fg.product_code
WHERE
    dc.customer = 'Atliq Exclusive'
GROUP BY MONTHNAME(fs.date) , YEAR(fs.date)
ORDER BY Year;
```

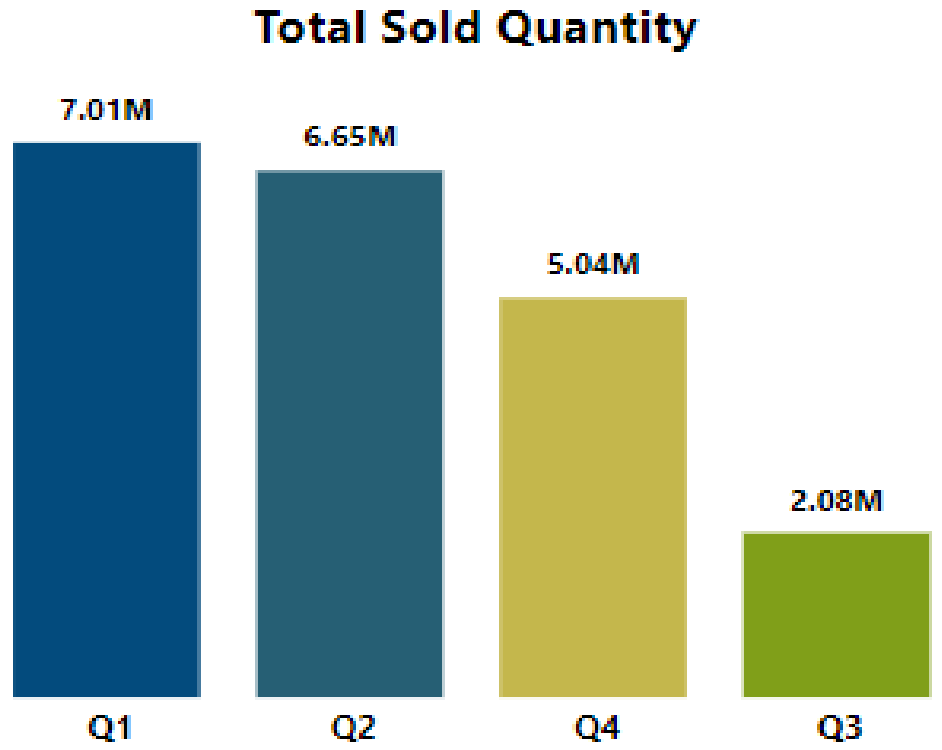
Month	Year	Gross sales Amount (M)
September	2019	9.09
October	2019	10.38
November	2019	15.23
December	2019	9.76
January	2020	9.58
February	2020	8.08
March	2020	0.77
April	2020	0.80
May	2020	1.59
June	2020	3.43
July	2020	5.15
August	2020	5.64
September	2020	19.53
October	2020	21.02
November	2020	32.25
December	2020	20.41
January	2021	19.57
February	2021	15.99
March	2021	19.15
April	2021	11.48
May	2021	19.20
June	2021	15.46
July	2021	19.04
August	2021	11.32
Total		**303.92**


Highest Gross Sales 32.25M Nov-2021
32.25
21.02
19.53
20.41
19.57
15.99
19.15
11.48
19.20
15.46
19.04
11.32
15.23
10.38
9.09
9.76
9.58
8.08
0.77
0.80
1.59
3.43
5.15
5.64
January
February
March
April
May
June
July
August
September
October
November
December
Year 2019 2020 2021
Lowest Gross Sales 0.77M Mar-2020

8. In which quarter of 2020, got the maximum total_sold_quantity? The final output contains these fields sorted by the total_sold_quantity and Quarter

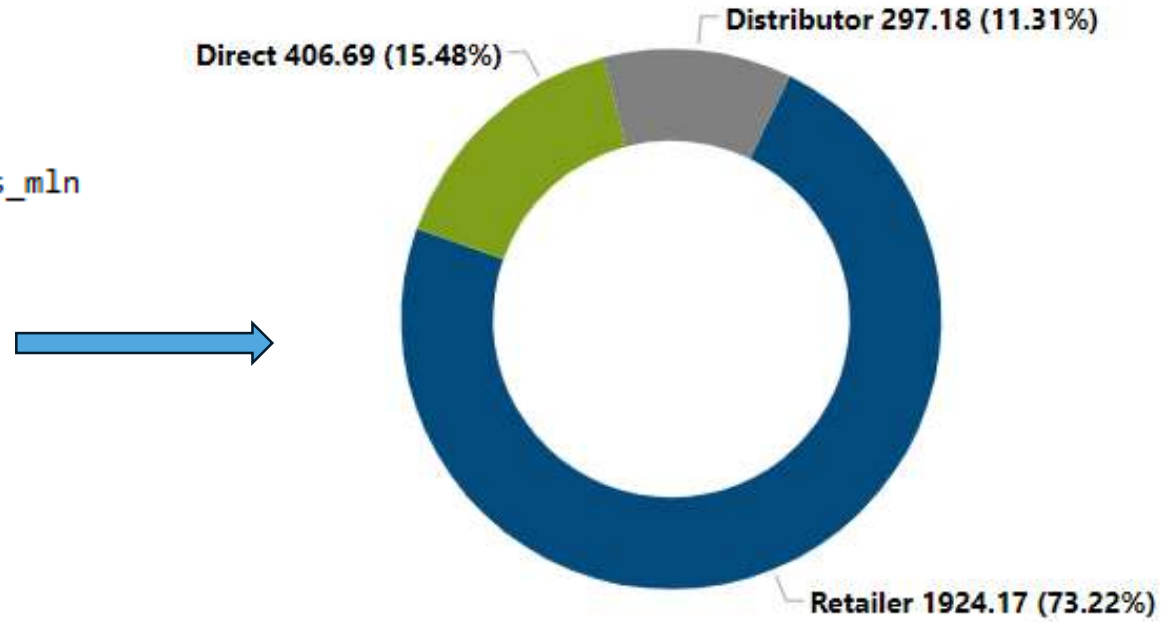
```sql
SELECT
CASE
    WHEN MONTH(date) IN (9 , 10, 11) THEN 'Q1'
    WHEN MONTH(date) IN (12 , 1, 2) THEN 'Q2'
    WHEN MONTH(date) IN (3 , 4, 5) THEN 'Q3'
    ELSE 'Q4'
END AS Quarter,
SUM(sold_quantity) AS Total_sold_quantity
FROM fact_sales_monthly
WHERE fiscal_year = 2020
GROUP BY Quarter
ORDER BY Total_sold_quantity DESC;
```

Quarter	total_sold_quantity
Q1	7005619
Q2	6649642
Q4	5042541
Q3	2075087



9. Which channel helped to bring more gross sales in the fiscal year 2021 and the percentage of contribution? The final output contains these fields - channel, gross_sales_mln, percentage

```sql
WITH total_sales_cte AS (
SELECT
dc.Channel,
ROUND(SUM(sold_quantity * gross_price) / 1000000,2) as gross_sales_mln
FROM fact_sales_monthly fs
JOIN fact_gross_price fg ON fs.product_code = fg.product_code
JOIN dim_customer dc ON fs.customer_code = dc.customer_code
WHERE fs.fiscal_year = 2021
GROUP BY dc.channel
ORDER BY gross_sales_mln DESC
)
SELECT
channel,
gross_sales_mln,
ROUND(gross_sales_mln * 100 /
(SELECT SUM(gross_sales_mln) FROM total_sales_cte) ,2) AS percentage
FROM total_sales_cte;
```

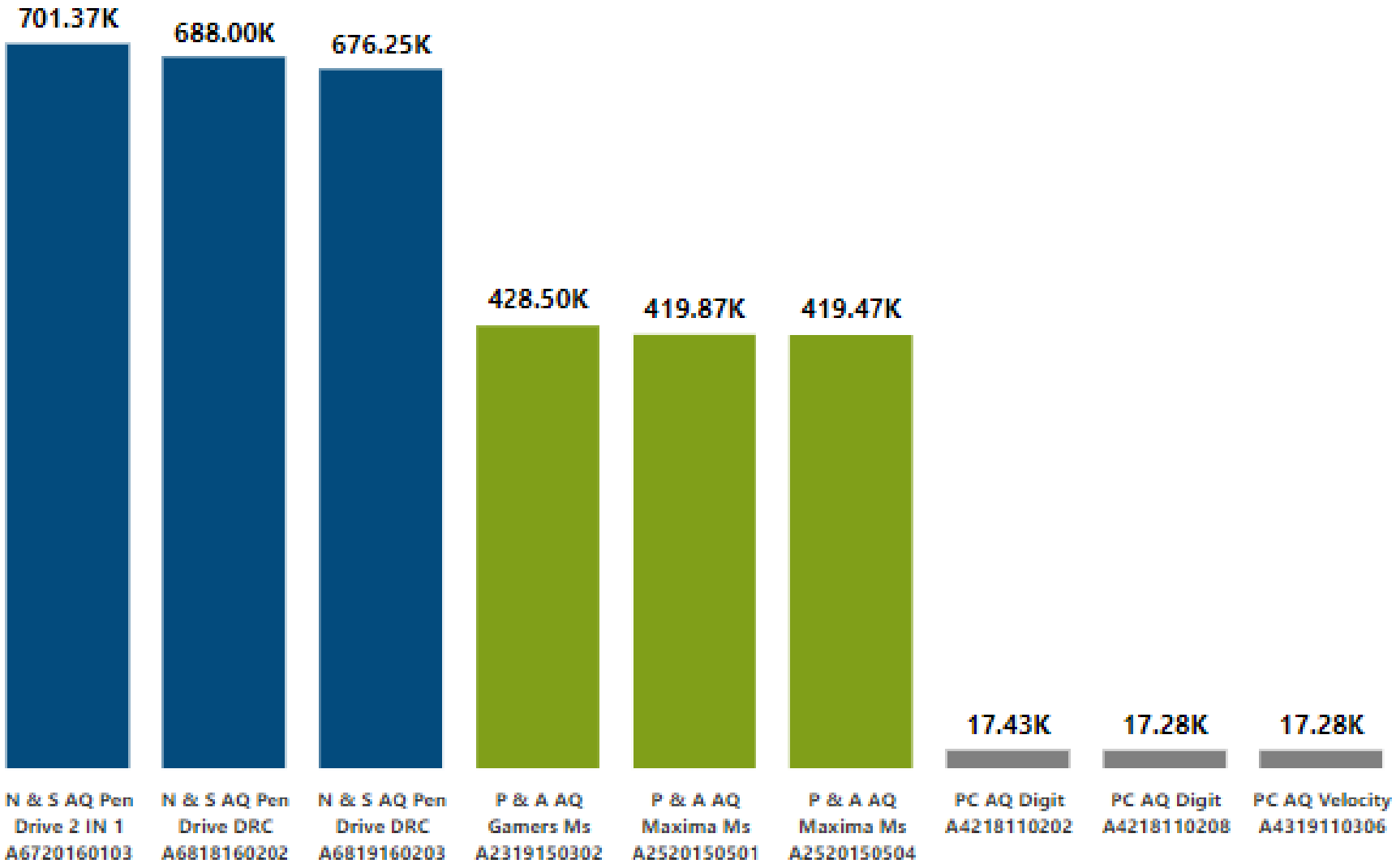


	channel	gross_sales_mln	percentage
▶	Retailer	1924.17	73.22%
	Direct	406.69	15.47%
	Distributor	297.18	11.31%

10. Get the Top 3 products in each division that have a high total_sold_quantity in the fiscal_year 2021? The final output contains these fields - division, product_code, product, total_sold_quantity, rank_order

```
With Ranked_products AS (
SELECT
dp.division,
dp.product_code,
dp.product,
sum(fs.sold_quantity) AS Total_sold_quantity,
RANK() OVER (PARTITION BY dp.division ORDER BY sum(fs.sold_quantity) DESC) AS rank_order
FROM fact_sales_monthly fs
JOIN dim_product dp ON fs.product_code = dp.product_code
WHERE fs.fiscal_year = 2021
GROUP BY dp.division, dp.product_code, dp.product
)
SELECT
division, product_code, product,
Total_sold_quantity, rank_order
FROM Ranked_products
WHERE rank_order <= 3 ;
```

division	product_code	product	total_sold_quantity	rank_order
N & S	A6720160103	AQ Pen Drive 2 IN 1	701373	1
N & S	A6818160202	AQ Pen Drive DRC	688003	2
N & S	A6819160203	AQ Pen Drive DRC	676245	3
P & A	A2319150302	AQ Gamers Ms	428498	1
P & A	A2520150501	AQ Maxima Ms	419865	2
P & A	A2520150504	AQ Maxima Ms	419471	3
PC	A4218110202	AQ Digit	17434	1
PC	A4319110306	AQ Velocity	17280	2
PC	A4218110208	AQ Digit	17275	3


701.37K
688.00K
676.25K
428.50K
419.87K
419.47K
17.43K
17.28K
17.28K
N & S AQ Pen Drive 2 IN 1 A6720160103
N & S AQ Pen Drive DRC A6818160202
N & S AQ Pen Drive DRC A6819160203
P & A AQ Gamers Ms A2319150302
P & A AQ Maxima Ms A2520150501
P & A AQ Maxima Ms A2520150504
PC AQ Digit A4218110202
PC AQ Digit A4218110208
PC AQ Velocity A4319110306

INSIGHTS

- Our unique products experienced a significant ***36.33%* increase** in sales during the fiscal **year *2021*** compared to the previous year, indicating strong market acceptance and demand.
- ***Notebooks*** emerged as the top-selling product, while Networking products had comparatively lower sales figures.
- ***Desktops (240.54M*)** incurred the highest manufacturing expenditure, while ***Mouse (0.89M)*** production costs remained comparatively lower.
- Notable contributors like Flipkart significantly supported our sales, while Amazon's contribution was slightly lower.
- For Atliq Exclusive, ***March 2020*** recorded the lowest sales period with 0.77M, while ***Nov-2021*** marked the highest sales contribution, 32.25M reflecting seasonal sales fluctuations.
- ***Notebooks, accessories*** and ***peripherals*** segments demonstrated substantial manufacturing growth compared to desktops, storage and networking products.
- The ***first quarter of FY2020*** observed the highest overall units sold ***(7.01M)***, while the ***Q3*** experienced the lowest ***(2.08M).***
- Our sales mostly originate from the "***Retailer***" channel (73.22%), while the "***Distributor***" channel contributes the least (11.31%).

THANKYOU

DHAVAL PATEL

Data Entrepreneur (12+ Years),
Founder @ codebasics.io,
Co-Founder @ AtliQ,
Youtuber 962K+ subscribers,
Ex. Bloomberg, NVIDIA

HEMANAND VADIVEL

Ex- Data Analytics Manager,
8+ Years in Europe, Microsoft Certified, Certified Supply Chain Professional
Company: Edgewell Personal Care

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THANK YOU

KRISHNA SAMEERA KOTA

https://www.linkedin.com/in/krishna-sameera/